

CLAIMS:

- 5 1. A molecular sieve comprising single crystals or agglomerates, the crystals or agglomerates having an average largest dimension of 100 nm or less which molecular sieve has a crystal or agglomerate size distribution such that the variance in the longest dimension is less than 15% of the average longest dimension, and is capable of forming a
10 colloidal suspension.
2. A molecular sieve as claimed in claim 1 in which the variance in the longest dimension is less than 10% of the average longest dimension.
- 15 3. A molecular sieve as claimed in claim 1 which is an MFI, MEL of β -type zeolite.
4. A process for preparing a molecular sieve comprising single crystals or agglomerates according to claim 1, comprising preparing a boiling
20 aqueous synthesis mixture comprising:
- (i) a source of silica, and
(ii) an organic structure directing agent in the form of a hydroxide, in an amount sufficient to cause substantially complete
25 dissolution of the silica source in the mixture; and crystallising the synthesis mixture at 120°C or less.
5. A process according to claim 4 in which the synthesis mixture further comprises a source of aluminum, gallium, boron, chromium, iron,
30 vanadium, alkali metal, or alkaline earth metal.
6. A process according to claim 4 in which the synthesis mixture comprises ingredients present in amounts sufficient to produce an MFI or MEL zeolite on crystallisation of the synthesis mixture.
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7. A process according to claim 4 for the production of zeolite β in which the synthesis mixture also contains a source of aluminum.

8. A process according to claim 7 in which the silica source is added to the synthesis mixture in which the form of a solid and the synthesis mixture is subject to vigorous stirring.

5 9. A process according to claim 8 in which the silica source is silicic acid.

10 10. A process according to claim 4 in which the molar ratio of the structure directing agent to silica in the synthesis mixture is 0.2 or greater.

15 11. A process according to claim 4 in which the organic structure directing agent is tetramethylammonium hydroxide, tetraethylammonium hydroxide, tetrapropylammonium hydroxide or tetrabutylammonium hydroxide.

12. A process according to claim 4 in which the alkalinity of the initial synthesis mixture, expressed as a molar ratio of OH/SiO_2 , is 1 or less.

20 13. A stable colloidal suspension containing molecular sieve ^{related} related in claim 1.